

7. Gena not broader than an eye; elytra and wings usually well developed, the former relatively long, slender, oval, and only weakly curved 8
Gena broader than an eye; elytra and often also the wings short or absent Platycraninae
8. Head without lobes; forms from Australia, New Guinea and Madagascar Podacanthinae
Head with two parietal lobes; forms from Central and South Africa Palophinae
9. Wingless (except *Phantasca*); mesonotum almost always shorter than the metanotum 10
Winged or with distinct wing rudiments; if wingless then the mesonotum is longer than the metanotum, or at least the terminal segment of the male is not cleft and the female has no beak-shaped ovipositor Necrosciinae
10. Male terminal segment never cleft and extended into lobes Heteronemiinae
Male terminal segment cleft and extended into two lobes, which narrow in side view towards the rear, or at least have two finger-shaped curved medioventral processes Lonchodinae

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Lepidoptera on Hoy, Orkney

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In July 1973, accompanied by my wife, I returned to Hoy to try to add to the list of Lepidoptera on the island. A visit in June 1969 had resulted in several new Orkney records and in particular substantiated the suggestion by Mr. Ian Lorimer that Berriedale, in the hilly north part of the island, was likely to be of special interest.

On this occasion we rented a cottage at Saltness in the south of Hoy. We had a car and there is an adequate road up the east side with a branch westward to Rackwick in the north. We stayed from 21st July to 1st August. The weather was initially fairly sunny but deteriorated around the 26th, with a change to a northerly wind and colder conditions. Forty-three species of Macrolepidoptera were identified. Of these a number were confirmations of 19th century records. Among them was *Eupithecia goosensiata* Mab. which had hitherto seemed of dubious occurrence. *Tethea duplaris* L. is new to the Orkney list although it is known from the Shetlands. A thorough search was made for *Lycaena phlaeas* L. as South records the insect

on Hoy from 1895 and it occurs in Caithness at the present time. However none was observed.

The following is a list of the insects seen:

Pieris brassicae L., a few. *Polyommatus icarus* Rott., common, flying over sunny grassy banks by the beach at Saltness, Rackwick and Orgill; they often flew together with the next species. *Maniola jurtina* L. *Coenonympha tullia* Müll., a few worn examples at Rackwick. *Hepialus humuli* L., 1 typical male, Melsetter, 27.VII. *H. fusconebulosa* Deg., Melsetter—2 at m.v. light. Berriedale—common around 10.30 p.m. *Tethea duplaris* L., Berriedale—fairly frequent at m.v. light on 24.VII and 29.VII. *Xanthorhoe munitata* Hübn., common in fields at Saltness at dusk. *X. montanata* Schiff., taken at dusk at Saltness and at m.v. light in Berriedale; common. *Epirrhoe alternata* Müll. *Entephria caesiata* Schiff., widespread on moorland. *Eulithis populata* L., Berriedale. *Chloroclysta truncata* Hufn., common. *Colostygia pectinataria* Knoch, Berriedale. *Hydriomena furcata* Thunb., common at m.v. light in Berriedale; very variable, ranging from a yellow ground colour to dark red-brown and melanic examples. *Perizoma didymata* L., Saltness. *Eupithecia nanata angusta* Prout., taken at m.v. light in Berriedale and on the moor above Saltness. *E. goosensiata* Mab., fairly frequent at m.v. light in Berriedale. *Campaea margaritata* L., common at Berriedale; also seen at dusk at Melsetter. *Opisthographis luteolata* L., Melsetter and Berriedale. *Euxoa tritici* L., common at m.v. light at Sands Geo S.W. of Melsetter on 30.VII from midnight. *Rhyacia simulans* Hufn., 1 taken on moor above Saltness, which has dark forewings and smokey hindwings. *Standfussiana lucerneae* L., common on moor above Saltness; all of moderately dark colouration. *Noctua pronuba* L. *Lycophotia porphyrea* Schiff., very common. *Diarsia brunnea* Schiff., taken at Saltness; also common and very fresh at m.v. light in Berriedale on 24.VII. *D. rubi* View., common at Berriedale and Melsetter. *Xestia c-nigrum* L., 1 taken at m.v. light at Sands Geo. *X. xanthographa* Schiff., 1 taken at m.v. light at Melsetter. *X. baja* Schiff., a few taken at m.v. light at Melsetter and Berriedale. *Hadena conspersa* Schiff., 1 taken at m.v. light, Berriedale; larvae common on *Silene maritima* in Geos, S.W. of Melsetter. *Cerapteryx graminis* L., taken at Melsetter. *Mythimna impura* Hübn., flying at dusk at Saltness; very common at Sands Geo. *Blepharita adusta* Esper. *Apamea monoglypha* Hufn., very common at m.v. light on the moor at Saltness; considerable variation in the depth of brown with many markedly melanic. *A. crenata* Hufn., taken at Saltness at dusk. *A. remissa* Hübn., 1 taken at m.v. light, Melsetter. *Oligia fasciuncula* Haw., common at m.v. light and also at *Senecio* flowers. *Plusia chrysitis* L., flying at Saltness at dusk. *Chrysospidea festucae* L., 1 at m.v. light, Sands Geo, 30.VII. *Autographa pulchrina* Hübn., at m.v. light at Melsetter and Berriedale. *Abrostola triplasia* L., 1 taken at m.v. light at Melsetter and 1 on the moor at Saltness. *Hypena proboscidalis* L., Melsetter.

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Reference

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Dimorphism in *Papilio* Pupae

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analysis of the pupal colours in these:—

	Green	Brown	Pink
<i>P. polytes</i>	105	52	—
<i>P. demoleus</i>	105	13	6

In these figures I have not differentiated between the various shades of brown pupae, darker, paler or containing a certain amount of green, etc., but I have recorded the pink form of *demoleus* separately, a form which it shares with *demodocus* but is not found in *polytes*.

Finally, a short while ago, I received through the kindness of Professor Clarke a copy of a paper (West, Snellings & Herbek, 1972) describing experiments with the American *P. polyxenes asterius* Stoll., establishing a definite relationship between the day/night ratio and the colour of the pupa, long day/short night (i.e. non-diapausing) pupae being mostly green and short day/long night (i.e. overwintering) pupae being brown, regardless of background, but non-diapausing pupae showed a certain flexibility, the colour being affected by the colour of the background and the light reaching the ventral surface of the pharate pupa. It was also noted that, whilst diapausing pupae were very uniform in tint, there was considerable difference in the shade of brown in non-diapausing pupae.

It is not, I think, unreasonable to assume that:—

1. The chemical difference between the green and brown forms of all dimorphic *Papilio* pupae is the absence or presence of melanin, and,
2. That the production of the melanin is triggered off by Hidaka's hormone.

The question to determine is what is the stimulus required to activate the various ganglions and produce the hormone.

Clarke & Sheppard found no indication of a genetical factor when working with *polytes*, but I cannot help feeling that a situation in which there were three genotypes, a definite green, a definite brown and an optional green/brown, would be almost impossible to detect statistically. A definite green or brown pupa, controlled genetically, could be a serious dis-